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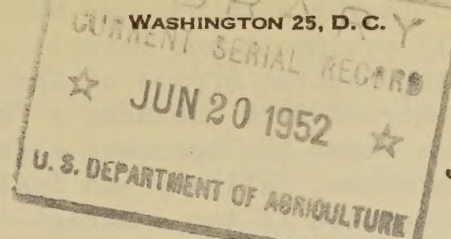
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UNITED STATES DEPARTMENT OF AGRICULTURE

ENG 521R1

RURAL ELECTRIFICATION ADMINISTRATION



June 2, 1952

TELEPHONE ENGINEERING MEMORANDUM 521R1

Subject: Contract Document and Specifications for Contract to Furnish,
Deliver and Install Central Office Equipment and Materials.

The purpose of this memorandum is to announce a revision in "Contract to Furnish, Deliver and Install Central Office Equipment and Materials," REA Form DS-T-25R1 and to announce the assignment of a separate number to the specifications which have also been revised. Copies of the contract and specifications are attached.

The changes in the proposal are as follows:

- (1) Article I, Section 1, Base Bid, To provide space for the bidder to indicate both time of delivery and time of installation for each exchange included in the contract.
- (2) Article II, Section 1, Time of Completion, To coordinate with the delivery and installation times stated in the base bid.
- (3) Article II, Section 2, Sequence of Installation, To indicate that the listing of exchanges in Article I, Section 1, Base Bid, is the sequence in which the exchange equipment is to be installed.

The principle changes in the specifications are as follows:

- (1) The specifications, Parts I, II, and III have been given numbers DS-T-67A, DS-T-67B, and DS-T-67C, respectively, for identification purposes. The numbers appear in the upper left-hand corner of the first page of each part.
- (2) Form DS-T-67A, Part I, General Specifications, New paragraphs 1.077, 1.078 and 1.079 have been added. Minor changes have been made throughout for purposes of clarification.
- (3) Form DS-T-67C, Part III, Detail Central Office Equipment Requirements, New paragraphs 16.6, 16.7, 16.8, 16.9 and 23.0 have been added while old paragraphs 23.0, 24.0 and 25.0 have been renumbered accordingly. Minor changes have been made throughout for purposes of clarification.

This form of contract is to be used by borrowers for purchasing new central office equipment and materials where such equipment and materials are to be installed by the supplier. It may also be used where the supplier is to furnish, deliver and install equipment and materials for additions to, or modifications of, existing central office equipment as indicated later in this memorandum. The contract form includes a "Notice and Instructions to Bidders" for use in cases where the borrower elects to obtain formal competitive bids for the purchase, delivery and installation of the equipment. This section may be deleted if the contract is to be awarded on the basis of informal quotations.

For completely new central office installations the contract consists of the following:

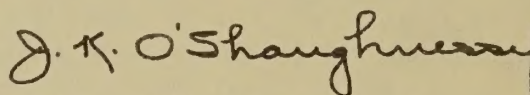
- (1) Notice and Instructions to Bidders (Include as indicated above)
- (2) Proposal and Acceptance
- (3) Form of Contractor's Bond
- (4) Specifications:

DS-T-67A	Part I -	General Specifications
DS-T-67B	Part II -	Installation
DS-T-67C	Part III -	Detailed Central Office Requirements (one required for each central office location)

For additions to, or modifications of, existing central office equipment, the contract consists of:

- (1) Notice and Instructions to Bidders (Include as indicated above)
- (2) Proposal and Acceptance
- (3) Form of Contractor's Bond
- (4) Detailed Specifications (to be prepared by the borrower's engineer)

Copies of the complete contract Form DS-T-25R1 and of specifications Part III - (DS-T-67C) may be obtained from REA upon request.



J. K. O'Shaughnessy
Chief, Engineering Division

Attachments:

Contract to Furnish, Deliver and Install
Central Office Equipment and Materials -
REA Form DS-T-25R1
REA Form DS-T-67A
REA Form DS-T-67B
REA Form DS-T-67C

NOTICE AND INSTRUCTIONS TO BIDDERS

1. Sealed proposals for the furnishing, delivery, and installation of central office equipment and materials for the telephone exchange (s) of _____ (hereinafter called the "Owner") which is to be part of the system known as _____ to be financed pursuant to a loan contract between the Owner and the United States of America (hereinafter called the "Government") by the Administrator of the Rural Electrification Administration (hereinafter called the "Administrator") will be received by the Owner on or before _____ o'clock, _____ M., _____, 19____, at _____, at which time and place the proposals will be publicly opened and read.

2. The Specifications, (composed of plans, specifications and drawings), together with all necessary forms and other documents for bidders, may be obtained from the Owner or from the Engineer, _____, at the latter's office at _____. The Specifications may be examined at the office of the Owner or at the office of the Engineer. A copy of the Loan Contract between the Owner and the Government may be examined at the office of the Owner.

3. Proposals and all supporting instruments must be submitted on the forms furnished by the Owner and must be delivered in a sealed envelope addressed to the Owner. The name and address of the Bidder, its license number, if a license is required by the State, and the date and hour of the opening of bids must appear on the envelope in which the proposal is submitted. Proposals must be filled in in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission and initialed and dated.

4. Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Specifications, forms of Bidders' Proposal and Acceptance, and Contractor's Bond attached hereto, and shall become informed as to the location and characteristics of the proposed central offices, the transportation facilities, the kind of facilities required before and during the delivery and installation of the equipment and materials, general local conditions and all other matters that may affect the cost and the time of completion of the work. Bidders will be required to comply with all applicable statutes, regulations, etc., including those pertaining to the licensing of contractors and the so-called "Kick-Back" Statute (48 Stat. 948) and regulations issued pursuant thereto.

5. Each Proposal must be accompanied by a bid bond or a certified check on a bank that is a member of the Federal Deposit Insurance Corporation, payable to the order of the Owner, in an amount equal to five percent (5%) of the maximum bid price. If a Proposal is not accepted or if a Proposal is accepted and a satisfactory Contractor's Bond is furnished by the successful Bidder, the bid bond or check will be returned in each instance within a period of thirty (30) days to the

Bidder furnishing same; except that each Bidder agrees, provided its Proposal is one of the three low Proposals, that, by filing its Proposal together with such bid bond or check, in consideration of the Owner's receiving and considering such Proposal, said Proposal shall be firm and binding upon each such Bidder and such bid bond or check shall be held by the Owner for a period of not exceeding ninety (90) days from the date hereinabove set for the opening of Proposals.

6. The successful Bidder will be required to furnish a Contractor's Bond on a form and with sureties satisfactory to the Owner and to the Rural Electrification Administration in a penal sum not less than the Contract price.

7. Should the successful Bidder fail or refuse to execute a contract and to furnish a Contractor's Bond satisfactory to the Owner and the Administrator within ten (10) days after written notification of the award of the Contract by the Owner, the Bidder will be considered to have abandoned the Proposal and the amount of the certified check or other security delivered with the Proposal shall thereupon be due and owing to the Owner as liquidated damages for such failure or refusal and the Owner may thereupon award the Contract to any other Bidder. The term "successful Bidder" shall be deemed to include any Bidder whose Proposal is accepted after another Bidder has previously refused or has been unable to execute the Contract or to furnish a satisfactory Contractor's Bond.

8. In estimating the lowest cost to the Owner as one of the factors in deciding the award of the Contract, the Owner will consider, in addition to the prices quoted in the Proposals, the following:

9. If requested by the Owner or the Administrator, the Bidder shall furnish evidence, satisfactory to the Owner and the Administrator, that the Bidder has the necessary facilities, ability, and financial resources to perform the Contract.

10. The Contract, when executed, shall be deemed to include the entire agreement between the parties thereto, and the Contractor shall not claim any modification thereof resulting from any representation or promise made at any time by any officer, agent, or employee of the Owner or by any other person.

11. The Owner reserves the right to waive minor irregularities or minor errors in any Proposal, if it appears to the Owner that such irregularities or errors were made through inadvertance. Any such irregularities or errors so waived must be corrected on the Proposal in which they occur prior to the execution of any Contract which may be awarded thereon.

12. The Owner reserves the right to reject any or all Proposals.

(Owner)

By _____
President

Date: _____

PROPOSAL TO FURNISH, DELIVER, AND INSTALL EQUIPMENT AND MATERIALS

To: _____
(Hereinafter called the "Owner")

The undersigned (hereinafter called the "Bidder") hereby proposes to furnish, deliver, and install the equipment and materials (hereinafter called the "Project") described in the plans, specifications and drawings (hereinafter called the "Specifications") attached hereto and made a part hereof, financed by a loan to the Owner by the United States of America, acting through the Administrator of the Rural Electrification Administration (hereinafter called the "Administrator") and designated _____.

The Bidder has become informed as to the location and characteristics of the proposed central offices, has become informed as to the kind of facilities required before and during the delivery and installation of the equipment and material and has become acquainted with the labor conditions which would affect the work.

The Bidder agrees that if its bid is accepted the following terms and conditions shall govern.

If, in submitting this Proposal, the Bidder has made any change in the form of Proposal furnished by the Owner, the Bidder understands that the Owner and the Administrator may evaluate the effect of such change as they see fit or they may exclude the Proposal from consideration in determining the award of the contract.

ARTICLE I

Section 1. Bid Price. The Bidder will furnish, deliver and install the equipment and materials described in the Specifications for the following sums:

Base Bid

Exchange (Name)	Materials and Equipment	Installation	Total Exchange Bid	Delivery Time Calendar Days	Completion Time Calendar Days
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		
	\$	\$	\$		

Total Base Bid - \$

Alternate No. 1 (add) (deduct)	\$	Alternate No. 5 (add) (deduct)	\$
Alternate No. 2 (add) (deduct)	\$	Alternate No. 6 (add) (deduct)	\$
Alternate No. 3 (add) (deduct)	\$	Alternate No. 7 (add) (deduct)	\$
Alternate No. 4 (add) (deduct)	\$	Spare Parts & Maintenance Tools	\$

Section 2. Changes in Project. The Owner, acting through the Engineer and with the approval of the Administrator, may from time to time during the performance of the contract effected by the acceptance of this proposal, make such changes, additions to or subtractions from the Specifications which are part of the Proposal as conditions may warrant; provided, however, that if substantial change in the Project shall require an extension of time, a reasonable extension will be granted if the Bidder shall make a written request therefor to the Owner within ten days after any such change is made, and provided further, that if the cost to the Bidder shall be increased or decreased by any such change or addition, the contract price shall be increased or decreased by the reasonable cost thereof in accordance with a contract amendment signed by the Owner and the Bidder and approved by the Administrator, but no claim for additional compensation for any such change or addition will be considered unless the Bidder shall have made a written request therefor to the Owner prior to the commencement of work in connection with such change or addition.

Section 3. Taxes. The bid price herein set forth does not include any amount which the Bidder estimates will be payable by the Bidder or the Owner on account of taxes imposed by any taxing authority upon the sale, purchase or use of materials, supplies or equipment to be incorporated in the Project.

ARTICLE II

Delivery and Installation

Section 1. Time of Completion. The time of delivery of materials and equipment and for completion of the Project are of the essence of this Contract. The Bidder will deliver the materials and equipment required hereunder for each Exchange within the number of calendar days specified in Article I, Section 1, after the Administrator shall have approved this contract in writing and will prosecute diligently and complete the installation of equipment and material for each Exchange to the satisfaction of the Owner and the Administrator within the number of calendar days specified in Article I, Section 1, after such approval. The time for such delivery and completion shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without the fault of the Bidder, including, but not limited to, acts of God, fires, strikes, floods, changes in the Specifications as herein provided, and acts or omissions of the Owner with respect to matters for which the Owner is solely responsible; provided, however, that no delay in such time for delivery or completion of the work or in the progress of the work shall result in any liability on the part of the Owner, and provided further that any claim for extension of time shall be adjusted at the time any such delay occurs or any such change is made.

Section 2. Sequence of Installation. All exchanges shall be installed in the sequence in which they are listed in Article I, Section 1.

Section 3. Supervision and Inspection. The Bidder will give sufficient supervision to the work, using his best skill and attention. He will carefully study and compare all drawings, specifications, and other instructions and will at once report to the Owner any error, inconsistency or omission which he may discover. The Bidder will keep on his work during its progress a competent superintendent and any necessary assistants, all satisfactory to the Owner. The superintendent shall represent the Bidder in his absence and all directions given to him shall be as binding as if given to the Bidder. When requested, such directions shall be confirmed in writing.

Section 4. Inspection and Tests. The installation of materials and equipment hereunder and all materials and equipment used therein shall be subject to the inspection, test and approval of the supervising engineer, if any, of the Owner, the Owner and Administrator, and the Bidder will furnish all information required concerning the nature or source of materials. Unless otherwise specified all materials shall be new. The Owner and the Administrator shall have the right to inspect all records of the Bidder and of any subcontractor relevant to the installation work. The Bidder will provide all reasonable facilities necessary for such inspection and tests.

Section 5. Employees. The Owner shall have the right to require the removal from the site of the project of any employee of the Bidder if in the judgment of the Owner such removal shall be necessary in order to protect the interest of the Owner.

Section 6. Defective Workmanship and Materials. Notwithstanding the acceptance of workmanship, materials or equipment or the giving of any certificate with respect to the completion of the work, if during performance hereunder or within one year after such completion, or within such longer period as the Project or any part thereof may be guaranteed by other provisions of the Agreement or the Specifications, the workmanship, materials or equipment shall be found to be defective

or not in conformity with the requirements of the Specifications, the Bidder will remedy or replace such workmanship, materials or equipment within thirty (30) days after notice of the existence thereof shall have been given to the Bidder by the Owner.

ARTICLE III

Payments and Releases of Liens

Section 1. Payment to Bidder.

(a) The Owner shall pay the Bidder upon the basis of estimates by the Bidder, approved by the Owner and the supervising engineer, if any, of the work completed, the following percentages of the price of the materials and equipment for each exchange set forth in Article I, Section 1, as and if revised:

45% when 50% of the materials and equipment for each exchange have been delivered at the site of the Project; 90% when all the materials and equipment for each exchange have been delivered at the site of the Project.

(b) Upon the complete installation of each exchange, the Owner shall pay the Bidder 90% of the Total Exchange Bid.

(c) Upon the completion of the Project, but prior to the payment to the Bidder of any amount in excess of ninety percent (90%) of the Total Contract Price, the supervising engineer, if any, of the Owner or the Owner shall inspect the work performed hereunder and if the work shall be found acceptable and all provisions hereunder fully performed, the supervising engineer, if any, of the Owner, or the Owner shall certify as to that fact and as to the amount of the balance found to be due to the Bidder. Such final certificate, after it has been approved by the Owner, if made by the supervising engineer, shall thereupon be submitted to the Administrator for his approval and when such approval has been given the Owner shall pay to the Bidder all unpaid amounts to which the Bidder shall be entitled hereunder; provided, however, such final payments shall be made not later than 120 days after completion of the Project, unless approval by the Administrator shall be withheld because of the fault of the Bidder.

Section 2. Release of Liens. Upon the completion by the Bidder of the work but prior to the payment to the Bidder of any amount in excess of ninety percent (90%) of the Total Contract Price, the Bidder will deliver to the Owner, in duplicate, releases of all liens and of rights to claim any lien from manufacturers, materialmen and subcontractors who have furnished materials or services for the work and an affidavit by the Bidder in a form approved by the Administrator, to the effect that all labor has been paid and that all such releases have been submitted to the Owner; and the Owner shall deliver to the Administrator for his approval one of the duplicates of each such release and affidavit.

In lieu of releases of lien, and if the Administrator shall so approve, the Bidder may deliver to the Owner, in duplicate, (1) an affidavit, in a form approved by the Administrator, that all manufacturers, materialmen and subcontractors who have furnished materials or services for the Project have been paid in full, and (2) an agreement to hold the Owner harmless against any liens arising out of the Bidder's performance hereunder which may have been or may be filed against the Owner.

ARTICLE IV

Particular Undertakings of the Bidder

Section 1. Protection to Persons and Property. At all times when equipment and materials are being delivered and installed the Bidder will exercise reasonable precautions for the safety of employees on the work and of the public, and will comply with all applicable provisions of Federal, State and Municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, unless such instructions are incompatible with Federal, State or Municipal Laws or regulations.

The following provisions shall not limit the generality of the above requirements:

(a) The Bidder will at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or work, and at the completion of the work he will remove all rubbish from and about the Project and all his tools, scaffolding and surplus materials and will leave his work "broom clean."

(b) The work, from its commencement to completion, or to such earlier date or dates when the Owner may take possession and control, shall be under the charge and control of the Bidder and during such period of control by the Bidder all risks in connection therewith and the materials to be used therein shall be borne by the Bidder. The Bidder will make good and fully repair all injuries and damages to the Project or any portion thereof under the control of the Bidder by reasons of any act of God, or any other casualty or cause whether or not the same shall have occurred by reason of the Bidder's negligence. The Bidder will hold the Owner harmless from any and all claims for injuries to persons or for damage to property during the control by the Bidder of the Project or any part thereof.

(c) Monthly reports of all accidents will be promptly submitted by the Bidder, giving such data as may be prescribed by the Owner.

Section 2. Delivery of Possession and Control to Owner. Upon written request of the Owner, approved in writing by the Administrator, the Bidder shall deliver to the Owner full possession and control of any completed exchange included in the Project, provided the Bidder shall have been paid at least 90% of such Total Exchange Bid. Upon such delivery of the possession and control of any such exchange to the Owner, the risks and obligations of the Bidder, as set forth in Article IV, Section 1 (b) hereof, with respect to such exchange shall be terminated; provided, however, that nothing herein contained shall relieve the Bidder of any liability with respect to defective workmanship or materials as specified in Article II, Section 6 hereof.

Section 3. Insurance. During the Bidder's performance hereunder, the Bidder shall take out and maintain insurance in the following minimum requirements:

(a) Workmen's compensation insurance covering all employees in statutory limits who perform any of the obligations assumed by the Bidder under the Proposal.

(b) Public liability and property damage liability insurance covering all operations under the Proposal: limits for bodily injury or death not less than \$50,000 for one person and \$100,000 for each accident; for property damage, not less than \$10,000 for each accident and \$25,000 aggregate for accidents during the policy period.

(c) Automobile liability insurance on all self-propelled vehicles used in connection with the Proposal, whether owned, nonowned, or hired; public liability limits of not less than \$50,000 for one person and \$100,000 for each accident; property damage limit of \$5,000 for each accident.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsections (b) and (c) of this Section 3. In any such event, the additional premium or premiums payable solely as the result of such additional insurance shall be added to the bid price.

Upon request by the Administrator, the Bidder shall furnish to the Administrator a certificate in such form as the Administrator may prescribe evidencing compliance with the foregoing requirements.

Section 4. Purchase of Materials. The Bidder will purchase all materials and supplies outright and not subject to any conditional sales agreements, bailment lease or other agreement reserving unto the seller any right, title or interest therein. Material and supplies shall become the property of the Owner as the Owner makes payments therefor to the Bidder in accordance with Article III, Section 1(a).

Section 5. Assignment of Guarantees. All guarantees of materials and workmanship running in favor of the Bidder shall be transferred and assigned to the Owner on completion of the work and at such time as the Bidder receives final payment.

Section 6. Patent Infringement. The Bidder will hold harmless and indemnify the Owner from any and all claims, suits, and proceedings for the infringement of any patent or patents covering any equipment used in the work. The Bidder will, at its own cost, (and Owner agrees to permit Bidder to do so) defend any suits which may be instituted by any party against the Owner for alleged infringement of patents relative to the Bidder's performance hereunder.

Section 7. Compliance with Statutes and Regulations. The Bidder will comply with all applicable statutes, ordinances, rules and regulations pertaining to the work. The Bidder acknowledges that it is familiar with the Rural Electrification Act of 1936, as amended, the so-called "Kick-Back" Statute (48 Stat. 948), and all regulations issued pursuant thereto, and Section 35 of the United States Criminal Code, as amended and the Bidder agrees to comply with the provisions of all of such statutes and regulations. The Bidder will furnish to the Administrator weekly an affidavit in the form attached hereto and made a part hereof and shall preserve a copy of the Bidder's payroll for three years after the date of completion, as required by the regulations issued under the "Kick-Back" Statute.

ARTICLE V

Remedies

Section 1. Completion on Bidder's Default. If default shall be made by the Bidder in the performance of any of the work hereunder, the Owner, without in any manner limiting its legal and equitable remedies in the circumstances, may serve upon the Bidder and the surety or sureties upon the Bidder's Bond or Bonds a written notice requiring the Bidder to cause such default to be corrected forthwith. Unless within twenty (20) days after the service of such notice upon the Bidder such default shall be corrected or arrangements for the correction thereof, satisfactory to both the Owner and the Administrator, shall be made by the Bidder or its surety or sureties, the Owner may take over the performance of the Bidder's obligations hereunder and prosecute the same to completion by contract or otherwise for the account and at the expense of the Bidder, and the Bidder and its surety or sureties shall be liable to the Owner for any cost or expense in excess of the bid price occasioned thereby. In such event, the Owner may take possession of and utilize, in completing the Project, any tools, supplies, equipment, appliances and plant belonging to the Bidder which may be situated at the site of the Project. The Owner, in such contingency, may exercise any rights, claims or demands which the Bidder may have against third persons in connection herewith and for such purpose the Bidder does hereby assign, transfer and set over unto the Owner all such rights, claims and demands.

Section 2. Enforcement of Remedies by Administrator. The Administrator may on behalf of the Owner exercise any right or enforce any remedy which the Owner may exercise or enforce hereunder.

Section 3. Cumulative Remedies. Every right or remedy herein conferred upon or reserved to the Owner or the Administrator shall be cumulative and shall be in addition to every right and remedy now or hereafter existing at law or in equity or by statute and the pursuit of any right or remedy shall not be construed as an election.

ARTICLE VI

Miscellaneous

Section 1. Definitions.

(a) The contract documents shall consist of the Notice and Instructions to Bidders, the Proposal and Acceptance, the Contractor's Bond and the Specifications.

(b) The term "Completion" shall mean full performance by the Bidder of the Bidder's obligations herein set out and all amendments and revisions thereof. Certificate of completion signed by the supervising engineer or by the Owner, if the Owner shall not employ an engineer, and approved in writing by the Administrator within a reasonable time after completion shall be conclusive evidence as to the fact of completion and the date thereof.

Section 2. Materials and Supplies. The Bidder will use only such unmanufactured articles, materials and supplies as have been mined or produced in the United States, and only such manufactured articles, materials and supplies as have been manufactured in the United States substantially all from articles, materials or supplies mined, produced or manufactured, as the case may be, in the United States; provided that foreign articles, materials or supplies may be used in the event and to the extent that the Administrator shall expressly in writing authorize such use pursuant to the provisions of the Rural Electrification Act of 1938, being Title IV of Public Resolution No. 122, 75th Congress, approved June 21, 1938. The Bidder agrees to submit to the Owner such certificate or certificates, signed by the Bidder and all subcontractors, with respect to compliance with the foregoing provision as the Administrator from time to time may require.

Section 3. Discrimination. The Bidder shall not discriminate against any employee or applicant for employment because of race, creed, color or national origin.

Section 4. Bond. The Bidder shall furnish to the Owner a bond in a penal sum not less than the bid price and in a form and with a surety or sureties satisfactory to the Owner and the Administrator.

Section 5. License. The Bidder shall comply with all applicable construction codes.

(a) The Bidder warrants that he possesses contractor's license number _____ issued to him by the State of _____ in which the project is located, and said license expires on _____, 19____.

(b) The Bidder warrants that no license is required in the State in which the Project is located.

(Cross out that subsection which does not apply.)

Section 6. Nonassignment of Contract. The Bidder will not assign this contract, or any part thereof, or enter into any contract with any person, firm or corporation, for the performance of the Bidder's obligations hereunder, or any part hereof, without the approval in writing of the Owner and the Administrator. However, the Bidder may subcontract the whole or any part of the installation work to be performed at the installation site, (as distinguished from furnishing and delivery of equipment and materials), provided that (a) such subcontracting is let to a subsidiary of the Bidder, (b) the Bidder shall remain responsible for the performance thereof and (c) the Bidder shall obtain the consent of the surety to such subcontract. A copy of such consent shall be submitted to the Owner and the Administrator.

Section 7. Approval of the Administrator. The acceptance of this Proposal by the Owner shall not create a contract unless such acceptance shall be approved in writing by the Administrator within sixty (60) days after the date hereof, _____, 19____.

Section 8. Compliance with Regulations. The Bidder will comply with all applicable statutes, ordinances, rules and regulations pertaining to the work, including but not limited to, applicable regulations of the Office of Defense Mobilization, National Production Authority, Defense Production Administration, Economic Stabilization Agency, Office of Price Stabilization and Wage Stabilization Board.

(Bidder)

By _____

(Title)

(If executed by one other than President, Vice-President, a partner or the individual owner, a power of attorney authorizing execution should accompany this contract.)

Bidder _____

ACCEPTANCE

Subject to the approval of the Administrator, the Owner _____
_____, hereby accepts the Proposal
of the above-named Bidder for the Project therein described for the
Total Base Bid of \$ _____, and

Alternate No. 1 (add) (deduct) \$ _____

Alternate No. 2 (add) (deduct) \$ _____

Alternate No. 3 (add) (deduct) \$ _____

Alternate No. 4 (add) (deduct) \$ _____

Alternate No. 5 (add) (deduct) \$ _____

Alternate No. 6 (add) (deduct) \$ _____

Alternate No. 7 (add) (deduct) \$ _____

Spare Parts & Maintenance Tools \$ _____

The total contract price is \$ _____

(Owner)

By _____
(President)

(secretary)

Dated _____

SUPPLEMENT

Article I, Section 1, Bid Price, shall be modified as follows:

Notwithstanding the bid prices designated in Article I, Section 1, the Owner agrees to pay the Bidder for materials and equipment furnished hereunder for each exchange the Bidder's price for such materials and equipment in effect at the time of delivery; provided, however, that the price for the materials and equipment for an exchange shall in no event exceed the price quoted for materials and equipment for such Exchange designated in Article I, Section 1, by more than ten (10%) percent.

(Bidder)

By _____
(Title)

(Owner)

By _____
President

Date _____

SAMPLE AFFIDAVIT

State of _____

County of _____

I, _____,
(Name of party signing affidavit) (Title)

being duly sworn, do depose and say: That I pay or supervise the pay-
ment of the persons employed by _____,
(Contractor or subcontractor)
on the _____:
(Building or work)

That during the payroll period commencing on the _____ day of _____,
19____, and ending the _____ day of _____, 19____, all
persons on said project have been paid the full weekly wages earned,
that no rebates have been or will be made either directly or indirectly
to or on behalf of said _____
(Contractor or subcontractor)

from the full weekly wages earned by any person and that no deductions
have been made either directly or indirectly from the full weekly
wages earned by any person, other than permissible deductions, as
defined in the regulations under the "Kick-Back" Act (48 Stat. 948)
and described below:

(Signature and title)

Sworn to before me this _____

day of _____, 19____

CONTRACTOR'S BOND

1. Know all men that we, _____, as
Principal, and _____, as Surety,
are held and firmly bound unto _____
(hereinafter called the "Owner") and unto the United States of America
(hereinafter called the "Government") and unto all persons, firms and
corporations who or which may furnish materials for or perform labor on
a Rural Electrification Administration Project known as Project _____
_____ and to their successors and assigns, in the penal
sum of _____ dollars (\$ _____), as
hereinafter set forth and for the payment of which sum well and truly
to be made we bind ourselves, our executors, administrators, successors
and assigns jointly and severally by these presents. Said Project is
described in a certain contract to furnish, deliver, and install cen-
tral office equipment and materials (hereinafter called the "Construc-
tion Contract") between the Owner and the Principal, dated _____,
19____, pursuant and subject to a certain loan Contract (hereinafter
called the "Loan Contract") between the Owner and the Government,
acting through the Administrator of the Rural Electrification Adminis-
tration (hereinafter called the "Administrator").

2. The condition of this obligation is such that if the Principal
shall well and truly perform and fulfill all the undertakings, covenants,
terms, conditions and agreements of the Construction Contract and any
amendments thereto, whether such amendments are for additions, de-
creases, or changes in materials, their quantity, kind or price, labor
costs, mileage, routing or any other purpose whatsoever, and whether
such amendments are made with or without notice to the Surety, and
shall fully indemnify and save harmless the Owner and the Government
from all costs and damages which they, or either of them, shall suffer
or incur by reason of any failure so to do, and shall fully reimburse
and repay the Owner and the Government for all outlay and expense
which they, or either of them shall incur in making good any such
failure of performance on the part of the Principal, and shall promptly
make payment to all persons working on or supplying labor or materials
for use in the construction of the Project contemplated in the Construc-
tion Contract and any amendments thereto, in respect of such labor or
materials furnished and used therein, to the full extent thereof, and
in respect of such labor or materials furnished but not so used, to the
extent of the quantities estimated in the Construction Contract and any
amendments thereto to be required for the construction of the Project,
and shall well and truly reimburse the Owner and the Government, as
their respective interests may appear, for any excess in cost of con-
struction of said Project over the cost of such construction as provided
in the Construction Contract and any amendments thereto, occasioned by

any default of the Principal under the Construction Contract and any amendments thereto, then this obligation shall be null and void, but otherwise shall remain in full force and effect.

3. It is expressly agreed that this bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon any amendment to the Construction Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Construction Contract as so amended, provided only that the total amount of all increases in the cost of construction shall not exceed 20 percent of the amount of the maximum price set forth in the Construction Contract. The term "Amendment," wherever used in this bond, and whether referring to this bond, the Construction Contract or the Loan Contract, shall include any alteration, addition, extension, modification, amendment, rescission, waiver, release or annulment, of any character whatsoever.

4. It is expressly agreed that any amendment which may be made by agreement or otherwise between the Principal and the Owner in the terms, provisions, covenants and conditions of the Construction Contract, or in the terms, provisions, covenants and conditions of the Loan Contract (including without limitation, the granting by the Administrator to the Owner of any extension of time for the performance of the obligations of the Owner under the Loan Contract or the granting by the Administrator or the Owner to the Principal of any extension of time for the performance of the obligations of the Principal under the Construction Contract, or the failure or refusal of the Administrator or the Owner to take any action, proceeding or step to enforce any remedy or exercise any right under either the Construction Contract or the Loan Contract, or the taking of any action, proceeding or step by the Administrator or the Owner, acting in good faith upon the belief that the same is permitted by the provisions of the Construction Contract or the Loan Contract) shall not in any way release the Principal and the Surety, or either of them, or their respective executors, administrators, successors or assigns, from liability hereunder. The Surety hereby acknowledges receipt of notice of any amendment, indulgence or forbearance, made, granted or permitted.

5. This bond is made for the benefit of all persons, firms and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed under the Construction Contract and any amendments thereto, and they, and each of them, are hereby made obligees hereunder with the same force and effect as if their names were written herein as such, and they and each of them may sue hereon.

In witness whereof, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 19____.

	_____ (Principal)	(SEAL)
Attest:	By _____	
_____	_____	
(Secretary)		
	_____	(SEAL)
	(Surety)	
Attest:	By _____	
_____	_____	
(Secretary)		
	By _____	
	(Resident Agent of Surety)	

(The Contractor's Bond must be signed with the full name of the Contractor. If the Contractor is a partnership the Contractor's Bond must be signed in the partnership name by each partner. If the Contractor is a corporation the Contractor's Bond must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the corporation. A type-written copy of all such names and signatures shall be appended.

(The Contractor's Bond must be accompanied by a power of attorney authorizing execution on behalf of the Surety and, in jurisdictions so requiring should be countersigned by a duly authorized resident agent of the Surety.)

SPECIFICATIONS

Telephone Central Office Dial Equipment
100 to 800 Lines Ultimate
Capacity

0. Preface

0.1 These specifications consist of the following three parts:

- 0.11 Part I, DS-T-67A covers the minimum general requirements and types of service to be provided by dial telephone central office equipment for exchanges from 100 to 800 lines ultimate capacity. Circumstances may require that certain requirements in Part I be amended to meet individual situations. Such deviations will be set forth in Part III and will supersede the requirements of Part I.
- 0.12 Part II, DS-T-67B covers the central office equipment installation requirements.
- 0.13 Part III, DS-T-67C covers the detail central office equipment requirements.

Part I

GENERAL SPECIFICATION

1. DIAL SWITCHING EQUIPMENT

- 1.01 General. The central office equipment shall provide a means of connecting any dial telephone set in the exchange with any other dial telephone set in the exchange or with an available inter-office trunk without the aid of an operator. Each telephone set shall be connected with the central office by not more than two metallic conductors.
- 1.02 Subscriber Line Limitations
- 1.021 The central office equipment shall operate satisfactorily at the manufacturer's minimum battery voltage with subscriber lines which meet the following conditions:
- 1.0211 Loop Resistance - 0-1100 ohms maximum including the telephone instrument.
- 1.0212 Line Leakage - 15,000 ohms minimum between conductors or from either or both (conductors in parallel) conductors to ground over the range of loop resistance specified in 1.0211.
- 1.0213 Line Capacitance - 6 mfd. maximum bridged across the far end of a line which has a loop resistance of 500 ohms and leakage not exceeding the minimum specified in 1.0212.
- 1.022 Suitable long line adapters shall be provided for lines which do not meet the above requirements.
- 1.023 The central office equipment shall operate satisfactorily when used with dials whose speed of operation is between 8 - 12 impulses per second and whose break period is 62.5 percent, plus or minus 4%, of the total impulse period.
- 1.03 Class of Service
- 1.031 When multi-frequency ringing is utilized the general objective is full selective ringing on all lines, thus requiring divided ringing. Within a particular exchange area, however, there may be some lines on which full selective divided ringing is impractical due to inductive interference. Therefore, all connectors designed to provide for divided ringing shall be capable of ringing more than five parties on a bridged basis without requiring changes

- in the central office equipment or wiring. Interrupters providing a two ring code shall be furnished in all offices using full selective divided ringing.
- 1.032 The equipment shall be arranged so that the following classes of service may be offered to subscribers in the exchange area:
- 1.0321 Flat rate individual line-bridged ringing.
 - 1.0322 Flat rate two party - full selective ringing.
 - 1.0323 Flat rate four or five party - full selective ringing.
 - 1.0324 Flat rate eight or ten party - ringing as specified in Part III.
 - 1.0325 Flat rate PBX or trunk hunting consecutively numbered lines - bridged ringing.
 - 1.0326 Post pay pay station - same as individual line except with tone equipment.
- 1.033 In General unless otherwise specified in Part III of these specifications, each exchange shall be equipped to provide a minimum of two trunk hunting groups of not less than three lines each for consecutively numbered line or PBX service. Where an exchange does not have an immediate requirement for any or all trunk hunting groups it shall be possible to utilize the connector terminals for individual or party line service. An exception to the above general requirement is made for exchanges initially equipped for 100 lines or less which require three or more inter-office trunk groups. In those instances one trunk hunting group for consecutively numbered line of PBX service will be considered as adequate unless otherwise specified in Part III.
- 1.034 A call to an operator from a pay station shall cause a spurt of tone of from 0.5 to 1.0 second duration to be heard by the operator when she plugs into the answering jack. It shall be possible to repeat the tone signal by removing and reinserting the plug in the jack. Pay station numbers shall be arranged so that the fourth digit from the last is "9" in systems using more than three digit directory numbers.
- 1.035 Ringing shall be completely automatic and intermittent and shall be cut off from the called line immediately upon removal of the receiver or handset at the called station.

1.04 Ringling Digit Significance

Ringling digits shall have a standardized significance as indicated below:

10-Party Multi-Frequency Ringling

Ringling digit	Side of Line	Ringling Code	Frequency of ringling voltage (CPS)				
			33-1/3	50	66-2/3	16-2/3	25
			30	42	54	66	20
			30	40	50	60	20
							Harmonic
							Synchromonic
							Decimonic
1	Neg.	1 long	x				
2	Neg.	1 long		x			
3	Neg.	1 long			x		
4	Neg.	1 long				x	
5	Neg.	1 long					x
6	Pos.	2 shorts	x				
7	Pos.	2 shorts		x			
8	Pos.	2 shorts			x		
9	Pos.	2 shorts				x	
0	Pos.	2 shorts					x

8-Party Superimposed

Ringling Digit	Side of Line	Ringling Code	Ring Polarity
1	Neg.	1 long	-
2	Pos.	1 long	-
3	Neg.	1 long	+
4	Pos.	1 long	+
5	Neg.	2 shorts	-
6	Pos.	2 shorts	-
7	Neg.	2 shorts	+
8	Pos.	2 shorts	+

10-Party Divided Code

Ringling Digit	Side of Line	Code*		
1	Neg.	1		
2	Pos.	1		
3	Neg.	2		
4	Pos.	2		
5	Neg.	3		
6	Pos.	3		
7	Neg.	4		
8	Pos.	4		
9	Neg.	5		
0	Pos.	5		
			<u>*Code Ringling</u>	
			Code 1	1 long
			Code 2	2 long
			Code 3	1 long- 1 short
			Code 4	1 long- 2 shorts
			Code 5	3 shorts

1.05 Wire and Cable

- 1.051 Switchboard cable and cable forms shall be made with soft annealed tinned copper wire of suitable cross section to provide ample and safe current carrying capacity and mechanical strength. Wire insulation shall be such as to insure that the insulation resistance and dielectric strength requirements as outlined in these specifications are met under the conditions of temperature and humidity specified herein.
- 1.052 Adequate measures shall be taken in the design and installation of the equipment and cabling to limit the cross-talk level of the switchboard. Conductors carrying ringing current shall be cabled so as to insure against induction in talking circuits.
- 1.053 The switchboard and individual relay racks shall be furnished with suitable terminal blocks for connection to all external circuits and all necessary wiring shall be brought out and terminated on these terminal blocks.

1.06 Alarms

- 1.061 If the office is of the unattended type means shall be provided for transmitting an alarm indication to an attended location as well as indicating the alarm condition locally by means of lamps. By dialing a code set aside for that purpose it shall be possible at any time to determine whether the nonstandard condition is of a major or minor nature. The alarm indication at the attended location shall continue until the alarm has been acknowledged.
- 1.062 Visual and transmitted alarms shall be provided as follows:

<u>Cause</u>	<u>Time Delay</u>	<u>Alarm Sender Signal</u>
<u>Major</u>		
Common Equipment Fuse	0	No tone
Low Voltage	0	No tone
Linefinder control blocked	2-4 minutes	No tone
Ringing machine transfer		
2nd set faulty	0	No tone
Interrupter transfer		
2nd set faulty	0	No tone
Rectifier failure*	30 minutes	No tone

*See Paragraph 4.64

<u>Cause</u>	<u>Time Delay</u>	<u>Alarm Sender Signal</u>
<u>Minor</u>		
Individual Circuit fuse	0	Busy tone
Switch failure to release	2-4 minutes	Busy tone
Ringng machine transfer, 2nd set operating satisfactorily	0	Busy tone
Interrupter transfer 2nd set operating satisfactorily	0	Busy tone
Permanent condition	20-30 minutes	1 ring code
No trouble		2 ring code

1.07 Intra-Office Trunking

- 1.071 The number of intra-office trunks shall be calculated from the traffic information furnished in Part III of these specifications on the basis of one lost call in one hundred per switching stage using Molina Traffic Tables. The equipment shall be designed for ready expansion, without rewiring (except insofar as regrading is necessary), to handle the anticipated future calling rate as indicated in Part III.
- 1.072 The equipment shall be arranged that during periods of light traffic successive calls from the same line will take different paths thru the switching equipment. This action shall in no way be impaired by the failure, removal or cutting out of any switches, relay groups or links.
- 1.073 Means shall be provided in the switchboard to ensure approximately equal duty for each switch or relay group seized in initiating a call.
- 1.074 Switchboards of 100 lines ultimate capacity shall be designed so that any calling line in the switchboard shall have direct access to the total number of linefinders provided in that switchboard. Switchboards utilizing linefinder groups in excess of 100 lines shall be designed so that any calling line in a linefinder group shall have access to all linefinders in that group.
- 1.075 The equipment shall be so designed that when completing a call, switch thru to the called line shall be accomplished on local calls only after the ringing digit has been dialed.
- 1.076 The release of the switch train after the completion of a local call shall be under the control of the calling party.

- 1.077 On calls from subscribers to the operator office over toll trunks release of the switch train shall be under the control of the last party to disconnect. When an operator originates a call the release of the switch train shall be under the control of the operator.
- 1.078 Space and wiring shall be provided for the total number of intra-office trunks required to handle the traffic indicated by the initial calling rate specified in Item 13.0 of Part III based on the subscriber line wired capacity specified in Item 2.8 of Part III.
- 1.079 On calls to vacant connector terminals (connector terminals to which there is no line circuit connected) reveritive ringing tone shall not be returned to the calling subscriber.

1.08 Inter-Office Trunking

- 1.081 Unless otherwise specified in Part III of this specification all incoming inter-office trunk circuits shall terminate on incoming selectors or connectors.
- 1.082 In the case of extended area service trunks to another office a busy condition shall cause busy tone to be received by the calling party. If trunks carry toll traffic, a busy line condition shall be indicated to the toll operator by a flashing signal (60 IPM) on the operator's supervisory lamp in addition to the normal busy tone. An all trunks busy condition from selector levels or any inter-office trunk hunting levels shall be indicated to the toll operator by a 120 IPM flash with tone.
- 1.083 Part III will specify the method of operation when verification facilities are required. In any case, an operator and only an operator shall be able to override a busy line condition.

- 1.09 Tone Indications Tones shall be provided to indicate the progress of a call through the exchange; dial tone - to indicate that the switching equipment is ready to receive dial impulses; busy tone - to indicate that a busy line has been encountered; ring back tone - to indicate to the calling subscriber that the line called is being rung; all trunks busy tone from selector levels or inter-office trunk hunting levels (when applicable) - to indicate that the calling subscriber should try to make the call at some later time.

1.10 Traffic Meters

- 1.101 A linefinder peg count meter shall be provided for each linefinder group.
- 1.102 A linefinder "All links busy" or overflow meter shall be provided for each linefinder group.

- 1.103 An overflow or "All trunks busy" meter shall be provided for each nongraded group of two way or one way outgoing inter-office trunks.
- 1.104 A "last trunk busy" meter shall be provided for each graded group of two way or one way outgoing inter-office trunks.
- 1.105 A connector peg count meter shall be provided for each connector group when the number of connector groups initially equipped exceeds one.
- 1.11 Timed Disconnect. The central office equipment shall be designed to automatically disconnect any line equipped with the lockout feature after an interval of 2 to 4 minutes should a "permanent" condition occur prior to the transmission of dial impulses. When the "permanent" is cleared the line shall automatically be re-connected to the central office equipment in a normal manner.
- 1.12 Reverting Call
- 1.121 It shall be possible for subscribers on the same party line to call each other.
- 1.122 Reverting calls, when 100% lockout is specified in Part III, shall release the local link, and talking battery shall be supplied from the line circuit.
- 1.123 A "no answer" disconnect feature shall be provided which shall operate after a period not exceeding six minutes should the called party not answer a reverting call.
- 1.124 When directory number type of revertive call is furnished, the equipment shall be designed to provide a distinctive tone to the called subscriber when he answers as an indication that a revertive call is being made.
- 1.13 Fusing and Protection
- 1.131 The equipment shall be completely wired and equipped with trouble signals, fuses, and all associated equipment for the wired capacity of the frames or cabinets provided. Fuses shall be of the alarm and indicator type.
- 1.132 In linefinder-connector systems each link shall be individually fused and in selector type systems each switch or relay group shall be individually fused except that linefinders and selectors tied back to back may have a common fuse.
- 1.133 All relay and motor coils shall preferably be of the self-protecting type, capable of being continuously energized at rated voltage without injurious results. A permissible exception to this requirements is in the case of supervisory relays on switch type equipment. In any case, however, it is required that nonselfprotecting coils shall not at any time cause damage to other equipment components.
- 1.14 Relay Impedance Balance Requirements. Relays supplying talking battery to subscriber lines shall be adequately balanced as to impedance to ground to prevent troublesome talking circuit noise on certain lines resulting from induced noise voltages from nearby power lines acting on unbalanced relay impedances to ground.

1.15 Test Access Facilities

1.151 Equipment units shall be suitably designated and numbered.

1.152 Each switch or relay group shall be provided with test access facilities for testing the equipment.

1.16 Radio and Television Interference. Adequate precautionary measures shall be employed by the supplier to limit the radiation of radio frequency noise voltages generated by the central office equipment.

1.17 Heat and Humidity Requirements. It shall be possible for all components of equipment to meet the requirements of this specification at any ambient temperature within the range of 20°F. (-7°C.) to 120°F. (49°C.) and at a humidity of 90-95% except as otherwise noted.

1.18 Protection Against Corrosion. In order to prevent corrosion all metal parts shall be constructed of suitable corrosion resisting materials treated and/or painted to render them adequately resistant to corrosion under the climatic and atmospheric conditions existing in the area in which the equipment is to be installed.

1.19 Screws and Screw Threads

1.191 Except as permitted in paragraph 1.192, screw threads for all threaded securing devices shall be of American National form in accordance with the National Bureau of Standards Handbook H-28. All bolts, nuts, screws and washers shall be of nickel-copper alloy, steel, brass or bronze.

1.192 All bolts used shall be sufficiently long to ensure that, when nuts are screwed home, the first two threads of the bolt shall not be used. The length of the threaded portion on all bolts and nut ends of studs shall be not less than $1\frac{1}{2}$ times the bolt diameter. Unless otherwise specified, studs shall engage the part into which they are set for a length equal to at least one diameter.

1.193 Self-tapping screws shall not be used to mount or assemble any phonolic or plastic part which may require removal or disassembly for maintenance.

1.194 When screws with threads not in compliance with paragraph 1.191 are used they shall be readily identifiable as being nonstandard. In addition a quantity of screws representing ten percent but in no case more than 50 screws of each type of the amount used in the equipment shall be provided as spares with screws of each type separately packaged.

1.20 Miscellaneous

1.201 The Bidder shall furnish a tentative floor plan layout drawing indicating the arrangement of the equipment and giving dimensions for major units of equipment. The drawing shall show provision for the ultimate capacity as indicated in Part III of these specifications as well as minimum ceiling height required for installation, maintenance and ventilation of the equipment.

1.202 Within 30 calendar days after the date of final approval of the contract the Owner will furnish the necessary data concerning the building in which the equipment is to be installed to enable the Bidder to plan the manner in which the installation shall take place.

1.203 Within 30 calendar days after receiving the necessary building data the Bidder shall supply for approval by the Owner, floor plan drawings showing exact location of all equipment both initial and ultimate, including conduit runs, power distribution boxes, piers, openings and sleeves. In addition, conductor sizes shall be shown on the drawings for all A.C. power leads which must be extended from the power distribution box by the Owner. Within 30 calendar days after receiving the floor plan drawings from the Bidder the Owner shall either approve the drawings or take the necessary steps to have the drawings changed to meet his approval.

1.204 A switching diagram drawing shall be included indicating switch arrangement, switch quantities and traffic distribution.

1.205 The Bidder shall make recommendations concerning measures to be taken to insure adequate ventilation and heating of the central office building.

1.206 Three complete sets of equipment, circuit, circuit description, wiring list, circuit adjustment sheets and job drawings shall be furnished the Owner at the time of delivery of the equipment.

- 1.207 Separately priced and itemized lists of spare parts and maintenance tools as recommended by the Bidder shall be provided with the bid for the Owner's consideration.

2. MAIN DISTRIBUTING FRAME

- 2.1 Part III of these specifications specifies the type of main distributing frame required. When an "A" type is specified a quantity of protectors equal to the wired line and trunk capacity of the switching equipment shall be provided. When "B" type is specified protectors shall be furnished for all outside cable pairs.
- 2.2 Central office protectors shall be comprised of carbon blocks and relatching type heat coils.
- 2.3 It shall be possible to test all lines and trunks from the main distributing frame.

3. TEST EQUIPMENT

- 3.1 One hand test telephone shall be provided.
- 3.2 A wire chief's test set shall be provided and shall include a high resistance two scale meter (volts and ohms), an operators telephone circuit, dial circuit, outgoing trunk to dial equipment and the necessary test keys. The following test features shall be provided for:

Test for bridged foreign E. M. F.
Test of exchange battery
Test for short circuits
Test for open circuits
Test for grounds
Test for tip negative potential
Test for ring negative potential
Test condenser in subscribers set
Supply talking battery to the line
Ring subscriber
Test in and out of exchange
Test heat coils

4. POWER EQUIPMENT

- 4.1 Operating Voltage. The nominal switchboard voltage shall be 48 volts d.c.
- 4.2 Counter EMF Cells. Counter emf cells shall be used only for the purpose of reducing the voltage applied to the switching equipment during the time the battery is being given an equalizing charge and shall not be used during normal operation of the equipment with fully charged battery cells.

4.3 Power boards, cabinets or shelves shall be designed initially to handle the exchange when it reaches the ultimate capacity as indicated in Part III of the specifications.

4.4 Ringling and Interrupter Equipment

4.41 The principal ringling current source may be operated from the commercial a.c. voltage. However, adequate standby equipment shall be provided to operate from the central office battery.

4.42 Interrupter units shall be provided in duplicate with at least one unit operable directly from 48 volts d.c. Provision shall be made for automatic transfer from regular to standby ringling and interrupter equipment in case of failure of the commercial a.c. supply or in case the regular equipment becomes faulty.

4.43 When static tone generators operating from commercial a.c. voltage are used as the primary source of tones provision shall be made for continuity of operation during a power failure. When other types of tone generators are employed adequate standby tone equipment shall be provided which may be placed in operation upon failure of the regular equipment or during a power failure. Transfer may be accomplished automatically or by dialing a special number set aside for the purpose.

4.5 Power Control Equipment. Battery and charger control switches, d.c. voltmeter, d.c. ammeter, fuses or circuit breakers, supervisory and timer circuits shall be provided. When vibrator type frequency ringling converters are provided, a portable or panel mounted frequency meters and an a.c. voltmeter shall be provided as required in Part III of these specifications.

4.6 Charging Equipment

4.61 Charging shall operate on a full float basis and shall be capable of being manually turned on and off and shall be of the full wave, self-regulating, constant voltage, dry disc or equivalent type.

4.62 When charging lead-acid batteries the rectifier output voltage shall be adjustable to 2.15 volts per battery cell being charged and shall not vary more than plus or minus .02 volts/cell between 10% load and 100% load. Between 3% and 10% load the output voltage shall not vary more than plus or minus .04 volt/cell. Beyond full load current the output voltage shall drop sharply. The above output voltage limitations shall be maintained

with line voltage variations of plus or minus 10%. Provision shall be made to manually change the output voltage of the rectifier to 2.33 volts per cell to provide an equalization charge on the battery.

- 4.63 The maximum r.m.s. value of the alternating component (ripple) of the rectifier shall be as low as practicable and shall in no case exceed .10 volts from 0 - 120 cycles or .05 volts above 120 cycles at the output terminals of the rectifier filter with the battery connected.
- 4.64 The charging equipment shall be equipped with means for indicating a failure of charging current whether it is due to A.C. power failure, an internal failure in the charger, a blown fuse in either the A.C. or D.C. connections to the charger, or due to any other circumstances which might cause the output voltage of the charger to drop below the battery voltage.

Part II
SPECIFICATIONS

INSTALLATION

1.0 General

These specifications cover the general requirements for the installation of central office by the Bidder and outline the general condition to be met by the Owner in connection with such installation work.

2.0 The Owner shall:

- 2.01 During the progress of the installation, allow the Bidder and his employees free access to the premises and facilities at all hours. Likewise, the Owner and its representatives shall be allowed access to all parts of the buildings at all times.
- 2.02 Take such action as necessary to insure that the premises are dry and free from dust and in such condition as to not be hazardous to the installation personnel or the material to be installed.
- 2.03 Provide heat when required and general illumination in rooms in which work is to be performed or materials stored.
- 2.04 Provide suitable openings in buildings to allow material to be placed in position.
- 2.05 Provide suitable piers (when required on the approved floor plan drawings) for ringing and charging machines; provide the necessary conduit and commercial power conductors to the locations shown on the approved floor plan drawings; provide suitable openings or channels and ducts for cables and conductors, from floor to floor, and from room to room; an approved central office ground and suitable ground leads, as designated by the Bidder, all at the Owner's expense.
- 2.06 Test at its own expense all lines and trunks for continuity, leakage and loop resistance and ensure that all lines and trunks shall be suitable for operation with the central office equipment specified.
- 2.07 Make alterations and repairs to buildings necessary for proper installation of material, except to repair damage for which the Bidder or his employees are responsible.
- 2.08 Connect outside cable pairs and jumpers on the distributing frame.

2.09 When possible release for the Bidder's use such portions of the existing plant as are necessary for the proper completion of such tests as require coordination with existing facilities.

2.10 Promptly make such inspection as it deems necessary when notified by the Bidder that the central office equipment, or any part thereof, is ready for acceptance.

2.11 Provide and install adequate fire protection apparatus.

3.0 The Bidder shall:

3.01 Obtain the Owner's permission before proceeding with any work necessitating cutting into or through any part of the building structure such as girders, beams, concrete or tile floors, partition or ceilings. This does not apply to the installation of lag screws, expansion bolts and similar details used for fastening equipment to floors, columns, walls and ceilings.

3.02 Be responsible for and shall repair all damage to the building due to carelessness of his workmen, and shall exercise reasonable care to avoid any damage to the Owner's property. He will report to the Owner any damage to the building which may exist or may occur during the occupancy of the quarters.

3.03 Consult with the Owner before cutting into or through any part of the building structure where the fire or damp proofing may be impaired.

3.04 Take necessary steps to ensure that all fire fighting apparatus is accessible at all times. Inflammable materials shall be kept in suitable places outside the building.

3.05 Not use gasoline, benzene, alcohol, naphtha, carbon tetrachloride or turpentine for cleaning any part of the equipment.

3.06 Install the equipment in accordance with the specifications for the office.

3.07 Permit the Owner or its representative to witness the performance of tests and inspections in order that the Owner may be assured that the requirements for installation are met.

3.08 Upon request, before turnover, allow access by the Owner or its representative to the test equipment which is to be turned over as a part of the office equipment, to permit the checking of circuit features which are being tested and to permit the checking of the amount of connected equipment to which the test circuits have access.

- 3.09 Make final charger adjustments using the manufacturer's recommended procedure.
- 3.10 Promptly notify the Owner of the completion of the work on the central office or such portions thereof as are ready for inspection.
- 3.11 Promptly correct all defects for which the Bidder is responsible.

4.0 Installation Requirements

- 4.1 Installations shall be performed by competent personnel. All work shall be done in a neat and workmanlike manner. Equipment frames or cabinets shall be correctly located and carefully aligned. Cables shall be carefully laid with sufficient radius of curvature and protected at corners and bands to ensure against damage from handling or vibration.
- 4.2 All linefinder, selector and connector multiple and associated wiring shall be continuous, free from crosses, reverses, and grounds and shall be correctly wired at all points.
- 4.3 The dielectric strength between electrical circuits and ground shall withstand a 500 volt r.m.s. a.o. 60 cycle breakdown test. In all dielectric tests the voltage shall be raised gradually to the specified value and held at that value for one minute and then gradually reduced.
- 4.4 The insulation resistance of electrical circuits following the dielectric strength test shall not be less than 10 megohms at 500 volts d.c. at approximately room temperature (75°F.) and at a relative humidity of approximately 50%.
- 4.5 An inspection shall be made prior to performing operational and performance tests on the equipment but after all installing operations which might disturb apparatus adjustments have been completed. The inspection shall cover general features of apparatus and equipment and shall be of such character and extent as to disclose with reasonable certainty any unsatisfactory condition of apparatus or equipment.

Where any of the following conditions are observed either during above inspections, or inspections for apparatus adjustments, or soldering, or in testing of equipment, sufficient detailed examination shall be made throughout the type of equipment within which such condition is observed, or is likely to occur, to disclose the full extent of its existence:

- 4.51 Failure to compare in quantity and code with that specified for the installation.

- 4.52 Apparatus or equipment units damaged or incomplete.
- 4.53 Apparatus or equipment affected by rust, corrosion or marred finish.
- 4.54 Other adverse conditions resulting from failure to meet generally accepted standards of good workmanship.

5.0 Operational Tests

- 5.1 Operational tests shall be performed on all circuits and circuit components to ensure their proper functioning in accordance with appropriate circuit description sheets.
- 5.2 All equipment shall be tested to ensure proper operation of all features with the following subscriber line conditions:
 - 1) 1200 ohm loop and no leak
 - 2) Zero loop and 10,000 ohm leak
- 5.3 Switches in switch type equipment shall be tested and adjusted to operate without chattering.
- 5.4 The hunting action occurring on all trunk groups shall be tested for proper operation. When an "All trunks busy signal" is required it shall be tested.
- 5.5 Each connector shall be tested to ensure proper ringing on all lines to the main distributing frame with tests alternated between the two interrupters and ringing machines.
- 5.6 A revertive call shall be made from each line and on each connector to ensure proper operation on directory number revertive call systems.
- 5.7 Special number revertive call systems shall be thoroughly tested using each revertive call circuit and each revertive call interrupter.
- 5.8 Each conversation path shall be given a talk test and shall be tested for ringing cut-off, revertive ringing tone, conversation timing (if so equipped) permanent timing, dial tone and busy tone.
- 5.9 Repeaters and trunk circuits shall be checked to ensure the proper functioning of the circuit with the associated equipment. On circuits arranged for CX signalling each trunk of a composite or a phantom composite group shall be checked for:
 - 5.91 The absence of interference when pulsing over either or both of the remaining two trunks of a composite group.

5.92 The absence of crosstalk between talking channels within the central office wiring and equipment.

5.10 All fuses shall be verified.

5.11 Each alarm or signal circuit shall be checked for correct operation in connection with the equipment with which it is used.

Part III

SPECIFICATIONS

DETAIL CENTRAL OFFICE EQUIPMENT REQUIREMENTS

Telephone Company _____ Location _____

Office: _____ Location _____ Date _____

1.0 General. The Bidder shall furnish his equipment schedule for the purpose of information only, listing in detail, the equipment and materials to be furnished under the proposal. Notwithstanding such equipment schedule, the equipment and materials furnished by the Bidder must meet the requirements of Part I and Part III of these specifications.

2.0 Local Service Lines

		Number of Lines		
		Initially Equipped	Anticipated	
			5-yrs.	10-yrs.
2.1	Individual Lines (excluding PBX).....			
2.2	Two Party.....			
2.3	Four Party.....			
2.4	Eight Party.....			
2.5	Paystations.....			
2.6	Consecutively numbered lines or PBX Groups:...			
	No. of Groups No. of Lines in Group			

	(1)			
	(2)			
	(3)			
	(4)			
	(5)			
2.7	Total local service lines			

2.8 Switchboard wired capacity: Subscriber Lines _____

2.9 Anticipated ultimate capacity
(25 years): Subscriber Lines & Trunks _____

3.0 Long Line Equipment Data

3.1 Number of lines having a loop resistance, including the
telephone set, greater than 1100 ohms: 1100-1200 ohms _____

1200-1500 ohms _____

1500-2000 ohms _____

4.0 Type of Operation (Check one)

4.1 Terminal per line _____

4.2 Terminal per station _____

4.21 Number of connector terminals _____

5.0 Permanent Timing

5.1 Percentage of line circuits equipped for lockout _____

6.0 Conversation Timing

6.1 On all nontoll calls _____

6.2 On extended scope trunk calls _____

6.3 On other trunk calls _____

6.31 Explain: _____

7.0 Busy Verification

7.1 By prefix digit (Indicate number dialed) _____

7.2 By suffix digit (Indicate number dialed) _____

8.0 Ringing Equipment

8.1 Primary Ringing current generator (check one)

8.11 Rotary machine _____

8.12 Static type _____

8.13 Vibrator _____

8.14 Other (specify) _____

8.2 Standby Ringing Current Generator (check one)

8.21 Rotary Machine _____

8.22 Vibrator _____

8.23 When A.C. power is off, primary ringing current generator operates from central office batteries by means of dynamotor _____

8.24 Other (specify) _____

8.3 Type (check one)

8.31 Harmonic (16 2/3, 25, 33 1/3, 50, 66 2/3) _____

8.32 Decimonic (20, 30, 40, 50, 60) _____

8.33 Synchromonic (20, 30, 42, 54, 66) _____

8.34 Superimposed (20) _____

8.35 Other (explain) _____

8.4 Frequency and volt meters for ringing measurements (check one)

8.41 Panel mounted _____

8.42 Portable _____

8.43 Not required _____

9.0 If restricted service facilities are required, check appropriate blank:

9.1 On a per line basis _____

9.2 On a per group basis _____

Restricted Level

Trunks To

No. of Restricted Lines in Group

9.3 Describe any restricted services facilities required on incoming extended scope trunk calls _____

10.0 Paystation Operation (check one)

10.1 Postpay _____

10.2 Prepay _____

11.0 Revertive Call (check one)

11.1 Revertive call switch _____

11.2 Directory number _____

11.3 Either 11.1 or 11.2 _____

12.0 Type of Connectors (check one)

12.1 All connectors multi-party type _____

12.2 Type of connectors differ in various groups _____

When item 12.2 is checked explain fully: _____

13.0 Traffic Data

13.1 When all connectors are of the multi-party type or when the central office is to operate on a terminal per station basis, the following statement shall be completed:

The central office equipment shall be engineered to handle an initial average originating busy hour calling rate of _____ unit calls per line. It is anticipated that during the next ten-year period the average originating busy hour calling rate will increase to _____ unit calls per line.

- 13.2 When all connector groups are not of the multi-party type and the central office equipment operates on a combination terminal per line and terminal per station basis or on a terminal per line basis the following information shall be given:

Class of Service	Total Average Originating UC/L	Average Nontoll Terminating UC/L	Average Toll Terminating UC/L
Individual Lines			
Two Party			
Four Party			
Eight Party			
Paystations			
Consecutively Numbered Lines			
PBX Lines			

14.0 Test Train

14.1 Test Connectors (check one)

14.11 Required _____

14.12 Not Required _____

14.2 Number of Test Distributors Required _____

15.0 Intercept Facilities

15.1 Required _____

15.2 Not Required _____

15.3 Vacant Selector Levels (check one)

15.31 By Tone _____

15.32 By Operator _____

15.4 Line Intercept shall Be (check one)

15.41 By Tone _____

15.42 By Operator _____

15.5 Number of party lines on intercept simultaneously _____

15.6 Number of individual lines on
intercept simultaneously _____

15.7 Number of intercept trunk circuits _____

15.8 Method of Reaching Operator: (check one)

15.81 Separate trunk group _____

15.82 Regular inter-office trunks _____

15.821 Idle trunk selecting
equipment required _____

15.822 Intercept trunks connected to
last choice trunks in inter-
office trunk group _____

16.0 Numbering Scheme

16.1 Local directory numbers shall be _____ digits (indicate
number of digits)

16.2 On local calls (calls from one subscriber to another served
by the same central office) the _____ dial pull (s) shall
be absorbed.

16.3 On extended area service calls to _____ the _____ dial pull (s)
shall be absorbed.

16.4 On extended area service calls to _____ the _____ dial pull (s)
shall be absorbed.

16.5 Local first selector (or equivalent) level assignment:

"0" _____

"9" _____

"8" _____

"7" _____

"6" _____

"5" _____

"4" _____

"3" _____

"2" _____

"1" _____

16.6 Toll First Selector (or equivalent)
Level Assignment:

"0" _____
"9" _____
"8" _____
"7" _____
"6" _____
"5" _____
"4" _____
"3" _____
"2" _____
"1" _____

16.7 Extended area service incoming selector (or equivalent)
Level Assignment (Trunks to _____):

"0" _____
"9" _____
"8" _____
"7" _____
"6" _____
"5" _____
"4" _____
"3" _____
"2" _____
"1" _____

16.8 Extended Area Service Incoming Selector (or equivalent)
Level Assignment (Trunks to _____):

"0" _____
"9" _____
"8" _____
"7" _____
"6" _____
"5" _____
"4" _____
"3" _____
"2" _____
"1" _____

16.9 Extended Area Service Incoming Selector (or equivalent)
Level Assignment (Trunks to _____):

"0" _____
"9" _____
"8" _____
"7" _____
"6" _____
"5" _____
"4" _____
"3" _____
"2" _____
"1" _____

17.0 Special Service calls are answered: (check appropriate items)

17.1 At the operator office in _____

17.11 By means of the regular inter-office toll
trunks _____

17.12 By means of the regular inter-office
extended scope trunks _____

17.13 By means of a separate special
service trunk group _____

17.2 Locally

17.21 Explain: _____

17.3 The special service operator (s) is reached by dialing:
(Check appropriate items)

17.31 "0" for all special services _____

17.32 _____ for all special services _____

17.33 Special service codes as follows:

<u>Function</u>	<u>Number Dialed</u>	<u>Number of Circuits</u>
Wire Chief	_____	_____
Information	_____	_____
Repair	_____	_____
Business Office	_____	_____
Revertive Calls	_____	_____
_____	_____	_____
_____	_____	_____

17.34 Other method (Explain)

18.0 Main Distributing Frame

18.1 Type (check one)

18.11 "A" _____

18.12 "B" _____

18.2 Type of mounting

18.21 Wall Type _____

18.22 Floor Type _____

18.3 Total number of outside cable pairs to be terminated _____

18.4 Full L.I.D.F. cross connection facilities (check one)

18.41 Required _____

18.42 Not Required _____

18.5 State if additional protectors are required beyond minimum required in Part I:

19.0 Central Office Battery

19.1 A battery reserve of _____ busy hours shall be provided for this office when it reaches _____ lines at the anticipated traffic rate specified in item 13.0.

19.2 Type of battery rack required (check one)

19.21 Single tier _____

19.22 Two tier _____

19.23 Two step _____

19.24 Three step _____

19.25 Other _____

Explain: _____

19.3 Type of battery (check one)

19.31 Lead Antimony _____

19.32 Lead Calcium _____

20.0 Charging Equipment

20.1 Charging equipment shall be provided capable of charging the office battery on a full float basis when the office reaches _____ lines at the anticipated traffic rate specified in item 13.0.

20.2 Indicate any special requirements concerning the charging equipment

20.3 Primary power supply data:

20.31 Voltage _____

20.32 Phase _____

20.33 Frequency _____

20.4 Special power equipment requirements: _____

21.0 Test Equipment (check desired items)

One hand test telephone X

Wire Chief's test cabinet X

Routine test set _____

Current flow test set _____

Howler circuit _____

Dial speed test circuit _____

22.0 Alarm Signals (check one)

22.1 Transmitted to operator office for handling _____

22.2 Handled locally _____

22.21 Explain in detail _____

23.0 Intra-Office Trunk Wired Capacity

23.1 Paragraph 1.078 of Part I of this specification
(check one)

23.11 Does not apply _____

23.12 Does apply _____

24.0 Floor Plan Information (check appropriate item)

24.1 A new building is contemplated, therefore a
suggested floor plan is requested for the
Bidder. _____

24.2 Attached is a drawing of the room in which
equipment is to be installed _____

25.0 Trunking Requirements;

25.1 Attached is a table of trunking requirements. In
addition a description shall be given, in detail,
of any special requirements such as universal
numbering with other exchanges, tandeming arrange-
ments, dial back trunks, etc. A sketch showing
relative location of exchanges and number of
circuits shall be included when there are trunk
groups to more than one office.

26.0 Explanatory Notes:

TRUNKING REQUIREMENTS

OFFICE

LOCATION

NAME OF DISTANT OFFICE →						
DIGIT(S) DIALED TO REACH DISTANT OFFICE →						
NUMBER AND TYPE OF OPERATION OF INTEROFFICE TRUNKS	LOOP	2-WAY				
		1-WAY INC.				
		1-WAY OUT.				
	SIMPLEX	2-WAY				
		1-WAY INC.				
		1-WAY OUT.				
	PHANTOM COMPOSITE	2-WAY				
		1-WAY INC.				
		1-WAY OUT.				
	CARRIER	2-WAY				
		1-WAY INC.				
		1-WAY OUT.				
USAGE	TOLL					
	EXTENDED SCOPE					
	SPECIAL AND OTHER					
TYPE OF SWITCHBOARD AT DISTANT END	MAGNETO					
	C.B. MANUAL					
	DIAL					
	TOLL					
TRUNK TERMINATION (LOCAL END)	INCOM. SELECT OR CONNECTOR					
	LINE CIRCUIT					
NO. OF TRUNK TERMINATING CIRCUITS	LOCAL END					
	DISTANT END**					
NO. OF PHANTOM GROUP COMPOSITE SETS*	LOCAL END					
	DISTANT END					
TRUNK PHYSICAL CHARACTERISTICS	APPROX. LOOP RESISTANCE					
	GAUGE					
	LOADING					
	LENGTH					

*COMPOSITE SETS TO INCLUDE SIGNAL CIRCUITS

**WHEN DISTANT END TRUNK TERMINATING CIRCUITS ARE REQUIRED AT A MANUAL OFFICE THE CORD CIRCUIT DRAWING NUMBER AND MANUFACTURER SHOULD BE INDICATED.

